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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,606	03/20/2001	Hiromasa Takahashi	520.39871X00	3900
20457	7590	09/07/2004	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP			WATKO, JULIE ANNE	
1300 NORTH SEVENTEENTH STREET			ART UNIT	PAPER NUMBER
SUITE 1800			2652	
ARLINGTON, VA 22209-9889				

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/811,606	TAKAHASHI ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Julie Anne Watko	2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 08/12/2004.
- 2a) This action is FINAL.                          2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-6, 15-17 and 21-33 is/are pending in the application.
- 4a) Of the above claim(s) 2-6, 15-17, 22-25, 29, 30, 32 and 33 is/are withdrawn from consideration.
- 5) Claim(s) 1, 21, 26-28 and 31 is/are allowed.
- 6) Claim(s) \_\_\_\_\_ is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 21, 2004, has been entered.

### ***Election/Restrictions***

2. The Examiner has fully considered Applicant's arguments filed August 12, 2004, regarding the withdrawn claims.
3. The Examiner is persuaded that on page 9, lines 4-9, the specification supports Applicant's assertion that the "granular" limitation is applicable to the elected species D, drawn to Fig. 6, described in the specification as "Example 1 (4)" (see, e.g., page 10, line 22). Specifically, "In the granular magnetic material made of a hard magnetic metal material and a non-magnetic insulating material, the multi-layer laminated is formed using the mixed sputtering method or the sputtering method, so that a hard magnetic material in granular form is formed in the non-magnetic insulating material" suggests that a laminated film (as described for the elected species) may be granular. Claims 27, 28 and 31, depending from elected claims 1, 21 and 26, will be examined on the merits as drawn to elected species D.
4. No independent claim is currently generic.
5. Independent claims 22 and 23, as amended, recite the limitation "soft magnetic material". It is noted by the Examiner that this limitation refers to part 701 in Fig. 7. Non-elected species E

is drawn to Fig. 7, described in the Specification as “Example 4” (see, e.g., page 10, line 27). Claims 22-23 and their dependent claims are not readable on elected species E, which is devoid of the recited “soft magnetic material”. See Fig. 6, which shows no part 701. Claim 22 was examined previously under the Examiner’s assumption that the limitation “soft” was a typographical error, and that the limitation “oxide” was the intended limitation. Due to Applicant’s clarification that “oxide” was a typographical error within Claim 22, and Claim 22 has now been amended to correctly recite “soft magnetic material” (see page 13 of the paper filed August 12, 2004), it is now clear that claim 22 is not readable on the elected species.

6. Claims 1, 21, 26-28 and 31 are hereby examined on the merits. Claims 2-6, 15-17, 22-25, 29-30 and 32-33 are withdrawn from consideration as drawn to non-elected species. No claim is currently generic.

#### ***Claim Objections***

7. Claim 26 is objected to because of the following informalities:

Claim 26 recites the limitation “at least two of the regions of hard magnetic material which are separated from one another” in the last two lines. No “hard magnetic material” has been previously recited. The Examiner suggests -- a hard magnetic material -- in line 6 for consistency with the last two lines.

Claim 26 recites the limitation “each magnetic control layer” in line 4. No “magnetic control layer” has been previously recited. The Examiner suggests -- each magnetic domain control layer -- in line 4 for consistency with line 3, “magnetic domain control layer”.

Appropriate correction is required.

***Allowable Subject Matter***

8. Claims 1, 21, 26-28 and 31 are allowed.

9. The following is an examiner's statement of reasons for allowance:

Regarding claims 1, 21 and 27-28: The prior art of record neither shows nor suggests a magnetic domain control layer including regions of the claimed hard magnetic materials, in combination with regions of the claimed insulating materials, and further in combination with each magnetic domain control layer including at least two of the regions of hard magnetic material which are separated from one another.

Regarding claims 26 and 31: The prior art of record neither shows nor suggests a magnetic control layer including regions of the claimed materials, in combination with the claimed specific resistance, and further in combination with each magnetic control layer in contact with end surfaces of said magnetoresistive layer, and further in combination with each magnetic domain control layer including at least two of regions of hard magnetic material which are separated from one another.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

10. This application is in condition for allowance except for the following formal matters:

An objection to claim 26 is outstanding.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakaguchi et al (US Pat. No. 6633466 B2) show magnetic domain controlling layer 9 (see Fig. 1A) comprising two regions (6 and 8; or 801 and 803, for example) of magnetic material ("hard magnetic layer 801 formed of a CoPt alloy or other hard magnetic material", see col. 9, lines 2-3; see also col. 9, lines 5-6, "soft magnetic layer 803 formed of the same magnetic material as the free magnetic layer" which is "formed ... using the same magnetic material as the pinning layer 42" which is "a NiFe alloy, a Co or CoFe alloy", see col. 7, lines 58-66); however, Sakaguchi et al are silent regarding specific resistance of the magnetic domain control layer (see especially the location of electrical lead layers 10).

Ding et al (US Pat. No. 6449135 B1) shows magnetic domain control layers (see Fig. 11) comprising Sendust 112a (see col. 5, line 60), first hard-biasing material 114a (see col. 4, line 49), "low-resistivity material 116 (116a, 116c)" (see col. 4, line 60), and second hard-biasing material 118a (see col. 4, line 61). Ding et al are silent regarding the specific resistance of the magnetic domain control layer; however, Ding et al teach that low resistance in a magnetic domain control layer improves signal to noise (see col. 6, line 61-col. 7, line 4).

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12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (703) 305-7742. The examiner can normally be reached on Tues, Thurs and Fri 10AM-10PM, alternate Saturdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Julie Anne Watko  
Primary Examiner  
Art Unit 2652

September 3, 2004  
JAW

